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09/778,479	02/07/2001	Philipp H. Schmid	M61.12-0337	4705

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EXAMINER	
SHORTLEDGE, THOMAS E	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/778,479	SCHMID ET AL.
	Examiner	**Art Unit**
	Thomas E Shortledge	2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 21-26* is/are pending in the application.

4a) Of the above claim(s) *14-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 21-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/07/01*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

I. Claim 1-13 and 21-26, recite a grammar represented as in a state-transition-based description, with a plurality of transitions from the first state and the second state, with values indicating the last transition classified in class 704, subclass 4.

II. Claim 14-20, recite a binary grammar containing a memory and rule index, both of which are converted to offsets so that the beginning of the corresponding entries are properly accessed, classified in class 704, subclass 7.

1. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because invention I recites a general state-transition grammar, that can contain many different grammar models, not necessarily the binary grammar of invention II. The subcombination has separate utility such as it has the ability to supply a binary format for any context-free speech grammar.

2. During a telephone conversation with Theodore M. Magee on 10/19/04 a provisional election was made without traverse to prosecute the invention of invention 1, claims 1-13, and 21-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 21 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Chung et al. (6,278,973).

As to claim 21, Chung et al. teach:

a computer-readable medium that provides a computer-loadable data structure representing a speech grammar (a read-only memory for storing software performing the operations of a speech recognition system, including a grammar, col. 3 lines 42-44, 57, and col. 4, line 1);

a string of words containing words in the speech grammar (fig. 1, element 120 show a represent of a word string which could be "is his data correct" or a different word string path);

a set of fixed size transition entries, each transition entry in a structure that describes the speech grammar, at least one transition making reference to a word in the string of words (fig. 1, element 120, show a transition entry representing the forms of the word "is", necessarily creating a transition entry of a fixed size).

As to claim 26, Chung et al. teach each transition entry comprises a next transition field that provides an index to a transition entry that represents a next transition in the structure (Fig. 1, element 120, the transitions from state to state have the ability to predict the next word in the sentence phrase, creating a sentence that is grammatically correct).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. in view of Woods (Transition Network Grammars for Natural Language Analysis).

As to claim 1, Chung et al. teach:

a computer readable medium providing a computer-loadable data structure, representing a state-and-transition-based description of a speech grammar (a read-only memory for storing software performing the operations of a speech recognition system, including a grammar, col. 3 lines 42-44, 57, and col. 4, line 1);

a first transition entry (group of arcs) representing a transition from a first state (fig. 1, element 120 shows a group of arcs, representing a transition between states);

a second transition entry representing a second transition from the first state, the second transition entry being contiguous with the first transition entry, (fig. 1, element 120 shows a second transition entry representing, where the second transition is based on the first transition).

Chung et al. do not teach having a last-transition value set to indicate that the second transition is the last transition from the first state.

However, Woods teaches an arc, which indicates under what conditions the state, is to be considered a final state, (page 593, col. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described

by Chung et al. with the ending state value of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 2, Chung et al. teach each transition entry has a fixed size (fig. 1, element 120, show a transition entry representing the forms of is, necessarily creating a transition entry of a fixed size).

As to claim 3, Chung et al. teach the data structure further comprises a word string comprising words found in the speech grammar (fig. 1, element 120 show a represent of a word string which could be "is his data correct" or a different word string path)

As to claim 4, Chung et al. do not teach each transition entry has a content index value that designates content associated with the transition.

However, Woods teaches a register within the grammar whose value is the current input word (page 594, col. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the ending state value of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 11, Chung et al. teach the data structure further comprises a set of semantic entries, each semantic entry representing semantic information associated with a transition in the grammar, (the arcs within the grammar contains the phonetic structure of the input string, col. 4, lines 32-35).

As to claim 12, Chung et al. teach a symbol string formed of a sequence of symbols (a series of symbols representing the available phones, col. 5, lines 9-13)

Chung et al. do not teach:

each semantic entry comprises a name offset that provides an offset to a symbol in the symbol string,

the symbol identified by the offset representing a semantic tag.

However, Woods teaches:

each semantic entry comprises a name offset that provides an offset to a symbol in the symbol string, (symbols contain information pertaining to which state to begin with, (necessarily creating an offset), page 593, col. 2);

the symbol identified by the offset representing a semantic tag (the offset is represented by a state name tag, page 593, col. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the symbols of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 13, Chung et al. do not teach each semantic entry further comprises a transition index value that provides an index to a transition entry that represents the transition associated with the semantic information of the semantic entry.

However, Woods teaches a symbol that represents an index listing a start state, and an arc set representing a transition associated with the input information, (page 593, col. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the input symbols of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

7. Claims 5-10, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. in view of Woods as applied to claims 4 and 21 above, and further in view of Shapiro (Generalized Augmented Transition Network Grammars For Generation From Semantic Networks)

As to claim 5, Chung et al. and Woods do not teach at least one transition entry has a content index value that is an index into the word string.

However, Shapiro teaches an input buffer that states where the word string will start within the stack (page 15, col. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described

by Chung et al. with the ending state value of Woods and with the input buffer of Shapiro to further remove the inconsistencies within the generation and use of a grammar, as taught by Shapiro (page 13, col. 1).

As to claim 6, Chung et al. do not teach rule entries, with each rule entry representing a group of transitions.

However, Woods teaches rules which representing the branches of a characterization tree, (page 600, col. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the rules of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 7, Chung et al. and Woods do not teach one transition entry has a content index value that is an index into a rule entry in the rule entries.

However, Shapiro teaches entries into lexical feature list, each such list containing rules for providing roots and categories, (page 15, col. 2)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the ending state value of Woods and with the input buffer of Shapiro to further remove the inconsistencies within the generation and use of a grammar, as taught by Shapiro (page 13, col. 1).

As to claim 8, Chung et al. and Woods do not teach each transition entry further comprises a rule reference flag field that indicates whether the content index value is an index into the word string or an index to a rule entry.

However, Shapiro teaches a register that can represent an index to the beginning of a word string or an action or special processing requirements (page 15, col. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the register setting of Woods and with the input buffer of Shapiro to further remove the inconsistencies within the generation and use of a grammar, as taught by Shapiro (page 13, col. 1).

As to claim 9, Chung et al. teach each entry has a fixed size (fig. 1, element 120, show a transition entry representing the forms of is, necessarily creating a transition entry of a fixed size).

Chung et al. do not teach a rule entry.

However, Woods teaches of rule entries (page 600, col. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the rules of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 10, Chung et al. and Woods do not teach each rule entry comprises a starting transition value that provides an index to a transition entry that represents the first transition for the rule.

However, Shapiro teaches entries into a lexicon, so each entry must be associated with a list one or more lexical feature lists, where each lexicon contains rules for representing category and root of the input, (page 15, col. 2). As in fig. 3, the rule transition can represent a first transition as in the transition from state m13 to be.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the register setting of Woods and with the rule lists of Shapiro to further remove the inconsistencies within the generation and use of a grammar, as taught by Shapiro (page 13, col. 1).

As to claim 22, Chung et al. do not teach rule entries, with each rule entry representing a group of transitions in a structure and each entry including an index to a transition entry that represents the first transition in the collection of transitions.

However, Woods teaches rule entries, with each rule entry representing a group of transitions (rules which representing the branches of a characterization tree, page 600, col. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described

by Chung et al. with the rules of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

Chung et al. and Woods do not teach each rule entry including an index to a transition entry that represents the first transition in the collection of transitions.

However, Shapiro teaches entries into a lexicon, so each entry must be associated with a list one or more lexical feature lists, where each lexicon contains rules for representing category and root of the input, (page 15, col. 2). As in fig. 3, the rule transition can represent a first transition as in the transition from state m13 to be.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the register setting of Woods and with the rule lists of Shapiro to further remove the inconsistencies within the generation and use of a grammar, as taught by Shapiro (page 13, col. 1).

8. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. as in claim 1 above, in view of Woods.

As to claim 23, Chung et al. do not teach each transition entry comprise a last transition flag that indicates whether the transition for the transition entry is the last transition from a state in the structure.

However, Woods teaches an arc containing the information expressing if the state is the final state or not, (page 593, col. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the ending state value of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 24, Chung et al. do not teach each transition entry comprises a semantic tag flag that indicates whether semantic information is associated with the transition for the transition entry.

However, Woods teaches a register that holds the information pertaining to TYPE, SUBJ, AUX, and VP for the successive instances of the symbol "+" in the fragment "(S + + + +)" (page 595, col. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the semantic information symbols of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

As to claim 25, Chung et al. teach a set of fixed size semantic entries (Fig. 1, element 120, teach a limited set of transition sets between the states, representing a limited set of available expressions. It would be necessary that these transition sets would also be used to represent semantic entries.)

Chung et al. do not teach:

a string of symbols comprising text representing semantic tags and semantic values; nor

at least one semantic entry making reference to a semantic tag in the string of symbols.

However, Woods teaches:

a string of symbols comprising text representing semantic tags and semantic values, (a string of symbols, "+", representing TYPE, SUBJ, AUX, and VP, each representing a part of the sentence, page 595, col. 2); and

at least one semantic entry making reference to a semantic tag in the string of symbols (entries including symbols representing the part of speech of the word, page 595, col. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the state transition representation of a grammar described by Chung et al. with the semantic information symbols of Woods to improve the ability for the model to represent natural language grammars, as taught by Woods, (page, 591, col. 1).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Alshawi (5,870,706), Zeljkovic (5,778,341), Komori et al. (5,812,975), and Green (A Survey of Three Dialogue Models).

Alshawi teaches state grammar construction within a language recognition system.

Zeljkovic teaches a speech recognition system with grammars modeled by Hidden Markov Models.

Komori et al. teach a grammar modeled as a state transition model used within voice recognition.

Green teaches the use of a context-free grammar within a dialogue model.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas E Shortledge whose telephone number is (703)605-1199. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703)306-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TS
10/27/04

TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER